

➤ Step 1

Yes, this is unexpected as flash memory array grows, delays in propagation through the decode logic and delays propagating decoded addresses to the flash array account for larger access time.

### Step 1

a) Mouse:

Asynchronous bus is more suitable type for handling communication between a CPU and the peripherals. Mouse inputs are relatively infrequent in comparison to other inputs. The mouse device is electrically distant from the CPU.

### Step 2

b) Memory Controller:

Synchronous bus is more suitable type for handling communication between a CPU and the peripherals. The memory controller is electrically close to the CPU and throughput to memory must be high.

> Step 1

For all devices listed in the table, the synchronous bus requires all devices running at the same speed, so the processor must be operating in a very low clock rate. The long bus increase the possibility of clock skew, so the clock rate of the bus is limited.

> Step 1

The problems to an asynchronous bus are the time required to transmit huge amount of data. Usually, asynchronous buses are serial. Thus, for large data sets, transmission can be quite high. If a device is time sensitive, then an asynchronous bus may not be the right choice. There are certainly exceptions to this rule-of-thumb such as FireWire, an asynchronous bus that has excellent timing properties.

These problems led to asynchronous interconnects, which are not clocked. Because they are not clocked, asynchronous interconnects can accommodate a wide variety of devices, and the bus can be lengthened without worrying about clock skew or synchronous problems.

To coordinate the transmission of data between sender and receiver, an asynchronous bus uses a handshaking protocol. A handshaking protocol consists of a series of steps in which the sender and receiver proceed to the next step only when both parties agree. the protocol is implemented with an additional set of control lines.